

Application Serial No. 10/738,397
Reply to office action of August 10, 2006

PATENT
Docket: CU-3496

REMARKS/ARGUMENTS

Reconsideration is respectfully requested.

Claims 1-6 and 8-14 were pending in the present application before this amendment (claims 7 and 15 have been withdrawn). By the present amendment, claims 1, 3-5, and 11-13 are amended, claims 2, 7, and 15 have been canceled without prejudice with the applicant reserving the right to further prosecute the subject matter of these canceled claims in the future, new claims 16-23 have been added. No new matter has been added.

In the office action, claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Appl. No. 2002/0192868 (Kim). The "et al." suffix is omitted in a reference name.

The present invention first forms an oxide film (= a buffer layer), and a nitride film (= a spacer nitride film) layer. However, the Kim reference first forms the nitride film (= a spacer nitride film) for preventing a stress regarding a metal film and the oxide film (= a buffer layer) later. Also the Kim reference discloses a constitution processing a low-concentration ion implantation and a high-concentration ion implantation one by one, however, the present invention does not disclose the above mentioned constitution. And, the present invention discloses a constitution forming a spacer oxide film on the spacer nitride film, however, the cited invention 1 does not disclose it. Therefore, the present invention and the Kim reference are different.

The Applicant has subsequently amended claim 1 by requiring that the second forming step to comprise –forming successively a buffer layer and a spacer nitride film, and a spacer oxide film on the entire surface of the substrate including the gate

Application Serial No. 10/738,397
Reply to office action of August 10, 2006

PATENT
Docket: CU-3496

line.-- Support for this amendment is found at least in FIGS. 1A and 1B and in the specification at page 5, lines 10-12. This limitation requires a buffer layer to be under a spacer nitride layer.

At most the Kim reference teaches just the opposite layering configuration. That is, the Kim reference teaches that an oxide layer (111) is on top of the nitride layer (107). (See Kim FIGs 5, 12, 13, 14, nitride layer 107 underneath oxide layer 111). Furthermore, this difference between the Kim reference and the presently claimed invention is significant because the resultant semiconductor device made from the presently claimed invention retains a number of enhanced properties such as (1) an improved refresh time, (2) a diminished hot carrier degradation, (3) an improved GIDL current, (4) a higher breakdown voltage, and (5) a higher punch-through breakdown voltage. (See the specification pages 8-10 and Tables 1 and 2). Accordingly, the Applicant respectfully asserts that the Kim reference does not teach each and every claimed limitation of the presently claimed invention as required in claim 1.

In the office action, claims 2-6 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Appl. No. 2002/0192868 (Kim) in view of U.S. Patent No. 6,180,472 (Akamatsu).

Claim 2 has been subsequently canceled coupled with amending the subject matter of claim 2 into claim 1. Therefore, this rejection of claim 2 should be withdrawn.

Although the Akamasu reference discloses processing RTA after an ion implantation, however, it is characterized that it is to increase SAC margin by adjusting a doping concentration of the spacer oxide film, and thus, the purpose and the effect of the present invention and the cited Akamasu reference are different. And, the spacer

Application Serial No. 10/738,397
Reply to office action of August 10, 2006

PATENT
Docket: CU-3496

film of the present invention is comprised of a double film of a nitride film and an oxide film, however, the Akamatsu reference is comprised of a low-concentration oxide film and a high concentration oxide film. The cited Okita reference is more related to circuit than a method for fabricating semiconductor. Therefore, as mentioned above, the present invention is different from the cited references of Akamasu and Okita, and thus, we consider that it is difficult to derive the present invention from the cited references of Kim, Akamasu and Okita.

The above arguments are equally applicable here in that the Kim reference does not teach forming the buffer layer below the nitride layer. Furthermore, the Akamatsu reference does not teach forming a spacer oxide film on top of the spacer nitride film and the buffer layer when the buffer layer and the spacer nitride film are on the entire surface of the substrate including the gate line. Therefore, Kim in view of Akamatsu cannot be considered to be teach, suggest or motivate all of the requisite elements of the present inventions as described in claims 3-6.

In the office action, claims 8, 11-12 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Appl. No. 2002/0192868 (Kim) in view of U.S. Patent Appl. No. 2003/0155595A1 (Okita).

The above arguments are equally applicable here in that the Kim reference does not teach forming the buffer layer below the nitride layer. Furthermore, the Okita reference does not teach forming a spacer oxide film on top of the spacer nitride film and the buffer layer when the buffer layer and the spacer nitride film are on the entire surface of the substrate including the gate line. Therefore, Kim in view of Okita cannot be considered to be teach, suggest or motivate all of the requisite elements of the

Application Serial No. 10/738,397
Reply to office action of August 10, 2006

PATENT
Docket: CU-3496

present inventions as required in claims 8, and 11-12.

In the office action, claims 2-6 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Appl. No. 2002/0192868 (Kim) in view of U.S. Patent No. 6,1747,294 (Gupta).

Claim 2 has been subsequently canceled coupled with amending the subject matter of claim 2 into claim 1. Therefore, this rejection of claim 2 should be withdrawn.

The above arguments are equally applicable here in that the Kim reference does not teach forming the buffer layer below the nitride layer. Furthermore, the Gupta reference does not teach forming a spacer oxide film on top of the spacer nitride film and the buffer layer when the buffer layer and the spacer nitride film are on the entire surface of the substrate including the gate line. Therefore, Kim in view of Gupta cannot be considered to be teach, suggest or motivate all of the requisite elements of the present inventions as required in claims 3-6.

In the office action, claims 10-14 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Appl. No. 2002/0192868 (Kim) in view of U.S. Patent No. 6,180,472 (Akamatsu), and further in view of in view of U.S. Patent Appl. No. 2003/0155595A1 (Okita).

The above arguments are equally applicable here in that the Kim reference does not teach forming the buffer layer below the nitride layer. Furthermore, Akamatsu nor the Okita references teach forming a spacer oxide film on top of the spacer nitride film and the buffer layer when the buffer layer and the spacer nitride film are on the entire surface of the substrate including the gate line. Therefore, Kim in view of Akamatsu and further in view of Okita cannot be considered to be teach, suggest or motivate all of the

Application Serial No. 10/738,397
Reply to office action of August 10, 2006

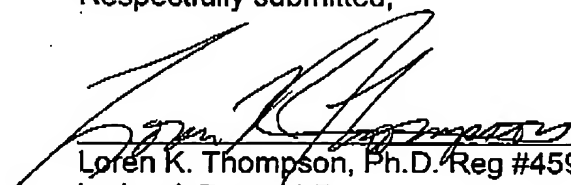
PATENT
Docket: CU-3496

requisite elements of the present inventions as required in claims 10-14.

For the reasons set forth above, the applicant respectfully submits that claims 1, 3-6 and 8-14, and 16-23 now pending in this application, are in condition for allowance over the cited references. Accordingly, the applicant respectfully requests reconsideration and withdrawal of the outstanding rejections and earnestly solicits an indication of allowable subject matter. This amendment is considered to be responsive to all points raised in the office action. Should the examiner have any remaining questions or concerns, the examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve such concerns.

Respectfully submitted,

Dated: November 7, 2006



Loren K. Thompson, Ph.D. Reg #45918
Ladas & Parry LLP
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300